

EXECUTIVE SUMMARY

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San Joaquin Valley Growth Response Study, Phase II

*Rae Archibald, Tridib Banerjee, Deepak Bahl
and Mark Hanson*

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Preface

The San Joaquin Valley Growth Response Study is driven by concerns about the effects of rapid growth in the San Joaquin Valley and the difficulties of responding to that growth, as well as by the existence of new ideas about smart growth, livable cities and sustainability. It is informed by a continuously evolving set of sophisticated models and tools for helping predict and guide growth. It is a reflection that land use and transportation planning are not integrated sufficiently enough to achieve effective use of land and economic and social resources. And it is being undertaken with the knowledge that political will is a necessary, major component in tackling growth issues—will that can be best assembled when understandable, quick-response, and informative tools are used as part of the planning process.

Caltrans District 6 (Fresno) has commissioned the San Joaquin Valley Growth Response Study—a comprehensive approach to guiding land use and transportation planning in the San Joaquin Valley. It is a three-phase study: Phase I began in the middle of 1999, and Phase III is intended to conclude in the middle of 2004. Phase II, the focus of this summary report, has been conducted by a team of consultants including RAND, USC's School of Policy, Planning, and Development, Fehr & Peers Transportation Consultants, and LDA Associates. As part of Phase II, two briefings were presented to interested stakeholders at workshops in Modesto and in Fresno, California, in November 2002. The topics discussed in those workshops are as follows:

- Module I: Purpose and Overview
- Module II: Smart Growth Best Practices
- Module IIB: The New Regionalism
- Module III: Toolkit Development
- Modules IV and V: Examples of Land Use-Transportation Tools

This report summarizes work related to Modules I through III. Phase II work is further described in an associated documented briefing and its appendices.

Module I: Purpose and Overview

The purpose of Phase II of the study has been to investigate the issues and opportunities for conducting integrated land use and transportation planning with stakeholders in the San Joaquin Valley. Phase II has built from the Phase I findings describing growth issues facing the San Joaquin Valley, and has explored in greater detail various “smart growth best practices” and “new regionalism” opportunities. Various available land use modeling tools have been critically reviewed, with the intent of moving the overall study towards a useful land use-transportation modeling exercise planned for Phase III.

Growth between 1990 and 2000 in Fresno and Clovis cities, for example, has considerably outpaced that of California as a whole—20.7%, 35.0% and 13.6%

respectively. Over the next 25 years, the City of Fresno is expected to grow by 63.9%.¹ Along with this accelerating growth, a number of key issues will continue to face the San Joaquin Valley:

- High unemployment and persistent poverty
- Need for economic development
- Loss of prime agricultural land
- Lack of strong sense of identity
- Distrust of governments
- Need for public-private partnerships
- Environmental concerns
- Transportation issues including transit
- Importance of preserving cultural heritage

Many of these issues are interrelated, and some problems will likely compound others. Expanding boundaries to accommodate a growing population, or to generate relatively greater short-term tax revenue by certain land uses such as retail ("fiscalization of land use"), can result in a loss of valuable farmland. This poses a serious economic challenge for planners and communities dependent on an agricultural economy. In addition, a scattered regional land use pattern has important implications for jobs/housing balance and vehicle miles traveled, which result in ever worsening traffic congestion and air quality in the San Joaquin Valley.

Integrated land use-transportation models can address these issues as part of a comprehensive planning process. Such models are able to consider a variety of alternative land use and transportation configurations at regional scale, to better inform and credibly influence local level planning decisions. Several collaborative efforts are already underway in the San Joaquin Valley with stakeholders that can usefully contribute to a regional land use-transportation planning exercise.

Module IIA: Smart Growth Best Practices

Growth and its associated problems are not unique to the San Joaquin Valley. Addressing these issues has inspired development of a useful body of knowledge describing "smart growth" and "sustainable development", in which there are many examples for planners to draw from as they seek to avoid development patterns that contribute to sprawl, congestion, and diminished air quality, among other concerns. Following smart growth principles can lead to the creation of compact, efficient, and environmentally sensitive patterns of development that provide people with additional travel, housing and employment choices, and reductions in land consumption, per capita vehicle travel, and consequent environmental impacts. Smart growth best practices potentially relevant to the San Joaquin Valley include:

¹ California Department of Finance. 2002.

- "Mixed use development" that generally combines retail, dining, entertainment and residential uses within walking distance of one another. Such developments often include higher density affordable housing and create an active community environment.
- "Transit-oriented development" that sites housing, employment and retail centers near public transit nodes. Land uses around centers are generally designed as pedestrian-friendly, with a mix of uses at higher density, along with open space. Transit-oriented development depends on a unifying, high frequency transit service, such as rail or bus lines, but can be applied near major highway interchanges where express transit or carpooling can occur.
- "Adaptive reuse", or "infill" development that aims to redevelop underutilized urban space. Decaying, abandoned buildings within the urban core can provide useful land and structures for residential and commercial development, reducing the need to develop lands at the urban edge, and potentially reinvigorating local economies. "Brownfields redevelopment" describes reuse of lands that have previous industrial-related uses. After environmental cleanup, these sites can often be used for residential and commercial uses, and as part of a mixed-use and/or transit-oriented development.
- Several innovations in bus service have dramatically increased ridership. These innovations include real-time information on bus arrivals and departures, signal priority systems favoring buses at intersections, more efficient boarding, fare prepayment, and streetscape improvements near bus stops.
- "Car sharing" describes a system whereby fleets of passenger vehicles--including environmentally friendly gas-electric hybrids and electric vehicles--are made available for transportation needs that cannot be served by or can supplement public transit. Car sharing programs are growing, and showing some success in urban areas of the U.S.
- Redesigning existing transit corridors to include multiple transit modes and mixed-use buildings is also possible. A central lane devoted to public transit, flanked by passenger vehicle lanes and bike lanes is one configuration. Landscaped medians and pedestrian walks with street-front retail uses can further enhance the design.

Many of these examples described above--mixed use, transit-oriented, infill, and brownfields development, as well as improved bus-service, car-sharing, and redesigning existing transit corridors, have been successfully linked to larger integrated land use transportation strategies elsewhere in California and the U.S. Doing so requires commitment at local, regional and state levels, as well as consistency of plans and policies between local jurisdictions.

Module IIB: The New Regionalism

The development of land and infrastructure creates a demand for transportation. Conversely, improvements and increases in transportation create demand for new development. As growth issues that were once localized expand to involve neighboring communities, and as the complexity of land use, transportation and growth management increases, we find that planning for orderly transportation and land use development requires simultaneous consideration of multiple demands at multiple scales. Responding to these various issues involves concerns of federal, state, regional, and local governments, planners, developers, citizens, and other stakeholders.

The "new regionalism" describes a movement towards creating collaborative solutions to emergent problems associated with growing, increasingly interrelated communities and interests. The new regionalism approach seeks to bring together public and private sectors in collaborative, often entrepreneurial ways to solve regional growth, land use, and transportation problems. It is a means for identifying, organizing, and prioritizing problems and opportunities at a regional scale. It seeks to create dialogue amongst various stakeholders, development of broad consensus, community empowerment, and implementation of strategies.

Several challenges to regional problem solving include: lack of coordination between multiple local governments; lack of local-level inputs to state-level planning mandates; competition for locally-based revenues among local governments; lack of resources for local-level planning; little political reward for regional leadership among local officials; and lack of a regional authority that can promote regional collaboration.

Several examples of successful, collaborative, regional efforts that have largely overcome these challenges exist in the U.S. Strategies include designating urban growth boundaries, promoting sharing of fiscal resources, and better understanding and coordinating transportation and land use decisions.

Stakeholders within the San Joaquin Valley have shown an interest in coordinated regional decision-making, with some local leadership beginning to emerge. *The Landscape of Choice: Strategies for Improving Patterns of Community Growth*, published by the Growth Alternatives Alliance and endorsed by the Fresno County Board of Supervisors and 15 cities within the Fresno County, is an example of collaboration among multiple organizations and interests to develop a common vision for future urban development and farmland protection. Similarly, the Regional Cooperation Element in the 2025 Fresno General Plan emphasizes the need for cooperation in land use planning, transportation, urban services, and environmental issues among all local jurisdictions. Projects of regional significance should be coordinated with neighboring jurisdictions and agencies during planning, approval, and implementation stages.

Module III: Toolkit Development

A goal of Phase II of the study is to develop a collection of useful information and tools (a “planning toolkit”) for local planning organizations and other regional agencies in the San Joaquin Valley. Elements of this planning toolkit include: a summary of some key growth-related issues facing the San Joaquin Valley, examples of potentially relevant smart growth best practices, and examples of collaborative regional problem-solving. A centerpiece of this toolkit is the specification of an analytic framework to be applied in developing an integrated land-use transportation model for Phase III of this study. With key issues, best practices, and regional stakeholders in mind, Phase II explored how such a modeling exercise could better inform the planning process at the local level.

Planning should be based on objective information and used in the process of achieving consensus. A sound planning process needs to go beyond showing alternatives. It must provide comprehensive solutions. Recent developments in computer modeling can help to overcome political, procedural and technical obstacles to planning.

Several models are available that provide useful applications at various stages of the planning process, and perform one or more of the following functions:

- "Forecasting" which generally occurs outside the local planning window to project regional-scale location decisions of industry, residences, and travel patterns. Forecasting models help to illustrate scenarios of growth and are based on projections along various parameters (e.g., population, economy, air quality, water supply and demand, traffic/VMT forecasts). With potential scenarios of growth in mind, however, local jurisdictions set planning goals (e.g., preservation of agricultural land, jobs creation, VMT reduction, compact communities, mixed-use development, jobs/housing balance, remove blight, increase tax base, etc.).
- "Searching for alternatives" which involves development of alternative plans that may support planning goals. Alternatives can be generated by adjusting various decision variables (e.g., growth boundary, soil conservation policy, local economic development, carpool/vanpool, transit services, density, urban infill, housing and retail along transit corridors, urban centers, mixed-use).
- "Predicting outcomes" which involves modeling outcomes of the various alternatives. Outcomes can be estimated for a number of performance measures (e.g., VMT, area of agricultural land, number of jobs, travel time, level of poverty, tax revenue, housing gap, and accessible amenities.)
- "Evaluating results" which involves evaluating outcomes in a manner that can support preferential ordering of planning options and policy decision-making.

At each stage of the planning process, different parties—each with different perspectives, technical backgrounds, and needs for information—may contribute in a different manner,

or favor information of differing nature. Searching for alternative plans based on growth forecasts and stated goals, for example, might involve less technically minded stakeholders or decision-makers at the local-level. More comprehensively and at regional scale, other functions may be needed; this might involve more complex technical processing of information and require sharing of information between various models (e.g., transportation models, air quality models, etc.) to predict various outcomes and evaluate various policy options.

Linking various models may require aggregating or disaggregating data and/or attributing results to differing functional units required as inputs (or produced as outputs) of various other models. Searching for alternatives (e.g., by “sketch planning”) may generate a number of testable land use plans for example. Economic models can be run to test whether these plans are economically viable, and may also return results that must be allocated to various land uses according to various rules. These land uses must be at a scale and in a form to support input requirements of traffic models. Land uses must also be defined at appropriate scale to make analysis of other environmental processes meaningful, and air quality emissions models require, in part, certain outputs from traffic models (e.g., VMT).

Based on available literature and a series of interviews with model developers and users, we have reviewed nearly 30 available models and found that several of them may perform more than one of the functions and satisfy various linkage requirements described above. Some appear to outperform others in certain areas, especially when considering various scales of policy intervention, scopes of analysis, data requirements, and ability to support the needs of various stakeholders in the San Joaquin Valley.

Specifying a preliminary framework for an integrated land use-transportation model, or suite of models, has involved the systematic application of criteria development and model selection, over a two-stage screening process. An initial screen from 30 to 18 models was based on a general assessment, based on available literature, along the following criteria:

- Relevance: Does it allow consideration of land use, economic, environmental and transportation data? Does it allow us to model the effects of various land use, economic, environmental and transportation policies?
- Versatility: Can the model be adapted to different applications, scaled up and down as necessary, and/or linked to other tools?
- History of success: Does the model have a history of success, including applications in California?

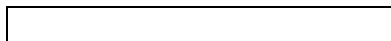
In the second screen of models, model capabilities and utility were considered more specifically. Also considered was at which point in the planning process the various models can best be applied. A number of potentially useful data were identified for a land use-transportation planning exercise in the San Joaquin Valley. The second screen was completed based on more detailed literature review, as well as interviews with

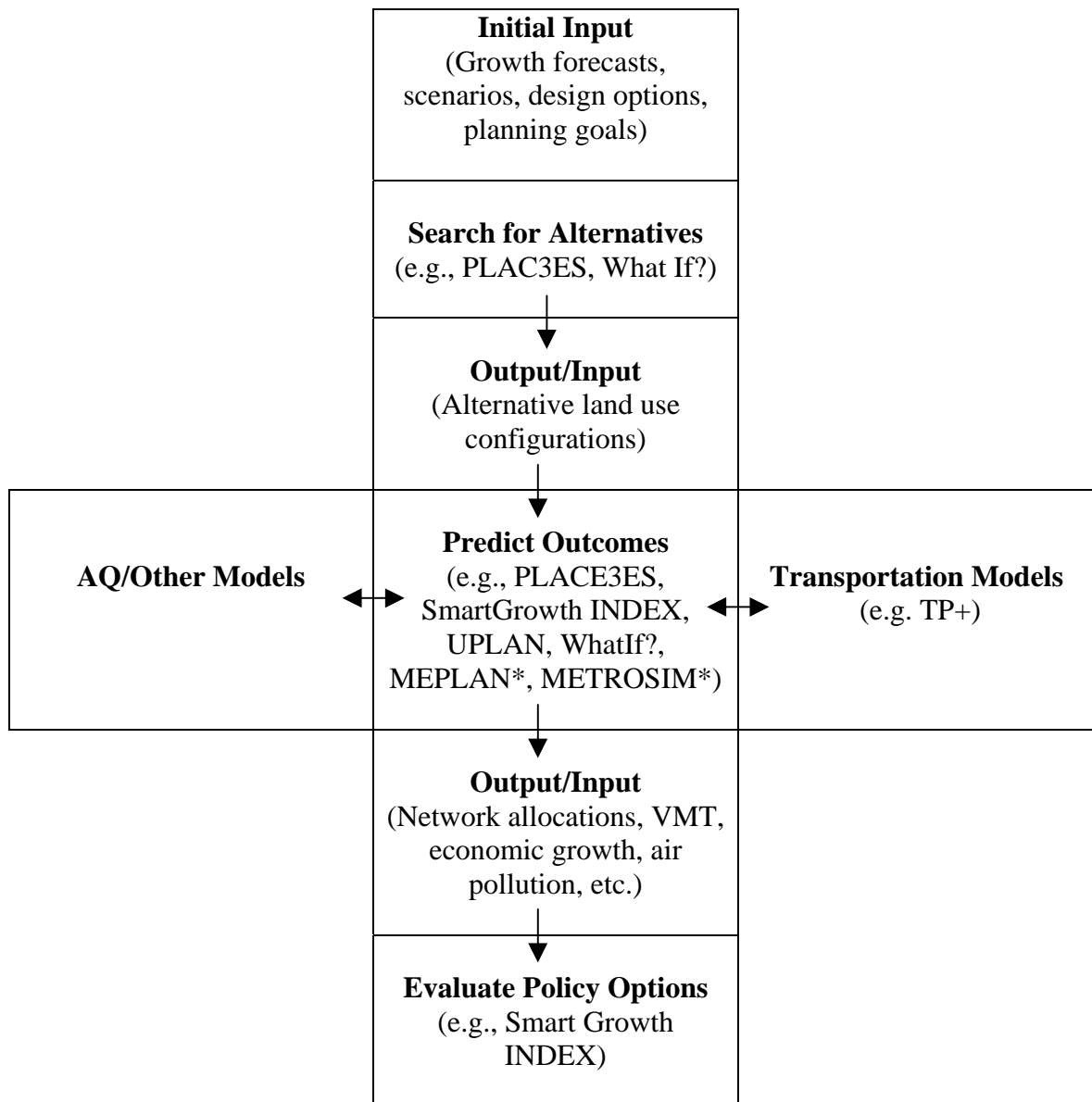
various model developers and users. Two general lists of models emerge in our second screen, as shown in the following table:

“Most Promising” Candidate Models

“List 1” – Local Scale	“List 2” – Local to Regional Scale
Community Viz* PLACE3S SmartGrowth INDEX UPLAN WhatIf?*	MEPLAN METROSIM
* These particular models lack history of success in California, but deserve additional consideration.	

"List 1" contains models that appear to be most useful at local scale, have less technical stakeholders in mind, and provide general guidance for asking “what if” questions during “sketch-planning” exercises. "List 1” models do not require vast amounts of data or extensive calibration, and can be linked to traffic models via geographical systems (GIS). “List 2” models, on the other hand, are based on more rigorous economic algorithms, can take advantage of a wider range of data, can produce a wider range of outputs, and when calibrated may produce more precise results. “List 2” models are generally more expensive, data-intensive, and require more expertise to set-up, run, and maintain. Combining models from both lists may have an advantage of more capably soliciting input from stakeholders, and combining various local-level information at regional scale and with additional models. None of these models has actually been run in Phase II of the study. Nonetheless, a promising framework for an integrated land-use transportation model that combines a number of models with different capabilities and utility is as follows:





Initial input for this model framework could include growth forecasts from the Council of Fresno County Governments; growth scenarios from Fresno and Clovis; generic design options; density options; and land use mix options. A number of models (e.g., PLAC3ES, “What If?”) could be applied to give alternative land use configurations as output. Preliminary output could already inform a refinement of policy choice, and be used to reiterate the previous step with different options.

With a reasonable range of alternative land use configurations, a land use model (e.g., PLAC3ES, Smart Growth INDEX, UPLAN) that integrates via GIS existing Caltrans and COG transportation models (e.g., TP+) could be used to generate local network allocations and VMT estimates for different alternatives. A land use model that is based on more rigorous economic algorithms (e.g., MEPLAN) could be run to enhance or

confirm land use allocation results at the local level, and/or be used to link local-level outputs at regional scale.

Transportation model outputs (e.g. VMT estimate) can serve as input to air quality models run by the San Joaquin Valley Air Pollution Control District. Land use model outputs can be fed into other environmental models as well (e.g., for habitat, water quality, etc.) Environmental consequences (e.g., pollution tonnage outputs) can serve to refine performance targets and monitor progress towards these goals. Alternative land use-transportation configurations are refined as necessary.

Conclusions

Phase II of the San Joaquin Valley Growth Response Study developed a collection of information and tools for local planning organizations and other regional agencies in the San Joaquin Valley intended to facilitate integrated land use and transportation planning with stakeholders in the San Joaquin Valley. Elements of this planning toolkit include: a summary of some key growth-related issues facing the San Joaquin Valley, examples of potentially relevant smart growth best practices, examples of collaborative regional problem-solving, and a preliminary specification for development of an integrated land-use transportation model for Phase III of this study.

The technical tools that are available and some of the processes that can be followed are described, but the importance of outreach and involvement of stakeholders as well as elected politicians in making the planning process work cannot be stressed enough because planning is inevitably a political activity.

The best land use and transportation planning processes are integrated. Experience suggests that neither process is as effective as it can be when done in isolation of the other. Although General Plans have separate land use and circulation elements (along with open space, conservation, housing, noise and safety elements), it is safe to say that the more closely integrated the land use and circulation elements, the better the General Plan. The tools to support planning must be scalable, and they must be able to address regional, local and multi-jurisdictional issues and visions.

It is also important to state that the planning process is iterative. While Phase III will be a demonstration project, the ultimate success of the modeling tool will depend upon refinements and adaptations over time as new issues arise and changing growth patterns present themselves.

It is in the spirit of planning with communities, not for them, and envisioning planning as a continuous, adaptive, political process that Phase II has been conducted as an important backdrop for proceeding with Phase III.

Ultimately, a final selection of a model for demonstration in Phase III will have to be made by the Phase III team, with full awareness of the modeling context, specific modeling questions in mind, and with a complete assessment of available data and

resources. A final specification will provide necessary inputs, linkages between components, and intended outputs. These details will necessarily emerge by further consultation with stakeholders and Caltrans staff, and as the modeling effort gets underway.